Canadian Centre for Occupational Health and Safety

Centre canadien d'hygiène et de sécurité au travail

LYME DISEASE

A Summary of the Occupational Health Concern

P89 - 14E

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June 1989

CCOHS CCHST

89-05022/

LYME DISEASE--A SUMMARY OF THE OCCUPATIONAL HEALTH CONCERN

This publication was prepared as a source of information for health and safety committees and others with an interest in understanding and reducing the occupational risk of Lyme disease.

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Cette publication est offerte en français sous le titre : La maladie de Lyme -- Un résumé des risques sur le plan professionnel.

CCOHS NUMBER P89-14E
ISBN 0-660-13246-X
DSS CATALOGUE NUMBER CC273-2/89-14E

Published 1989

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1. INTRODUCTION

Lyme disease is an occupational concern for people who work outdoors in certain areas infested with ticks. It affects people differently, often going unnoticed, but sometimes causes serious problems. If left untreated, it can cause disability.

It is important to be aware of the signs and symptoms of Lyme disease so it can be detected and treated promptly. It is also important to follow simple precautions to reduce the risk of getting Lyme disease.

2. WHAT IS LYME DISEASE?

Lyme disease was first recognized in North America in 1975 when doctors discovered an unusual number of people with arthritis in the town of Lyme, Connecticut, U.S.A.

The disease is caused by bacteria called Borrelia burgdorferi. Most often, these bacteria cause a mild illness that is sometimes accompanied by a peculiar skin rash. In some cases, however, the bacteria can spread to the joints, heart, and brain and cause serious problems. It can also cross from mother to unborn child and, in rare cases, cause birth defects.

3. WHAT IS THE SOURCE OF LYME DISEASE?

The bacteria that cause Lyme disease come from small, insect-like creatures called ticks. Ticks range in size from 1 to 4 millimeters (not much larger than a small ant). But, unlike insects, ticks have eight legs instead of six.

Ticks usually live in woods or tall grasslands in various regions of the country. Lacking wings, they hang onto small bushes or tall grass usually close to the ground, and wait for an animal or person to pass near them. They brush onto passing animals or people, and affix themselves to the skin in order to suck a small amount of blood. Sometimes people can feel ticks move around on the body, but tick bites are usually painless.

Lyme disease is spread mainly by two species of ticks in North America--the deer tick, Ixodes dammini, found mainly in the eastern regions of the continent, and the California black-legged tick, Ixodes pacificus in the western pacific regions. The wood tick, Dermacentor variabilis, sometimes carries the Lyme disease bacteria, but it does not appear to spread the disease.

The Ixodes ticks prefer to feed on wild animals. Immature ticks normally feed on the white-footed mouse, and adult ticks feed on white-tailed deer. Because of this, the number of mice and deer in a region influences the number of ticks found there.

4. HOW COMMON IS LYME DISEASE IN CANADA?

Presently, Lyme disease does not seem to be common in Canada. By June 1988, six cases were positively confirmed from Ontario (Chatham, Dryden, Huntsville, Long Point, Thunder Bay), and one from Quebec (Chicoutimi). Since Lyme disease became a reportable disease in Ontario in October 1988, six more cases (from the regions of Parry Sound, Stratford and north of Kenora) have been confirmed.

The United States reports from 1500 to 3000 cases of Lyme disease each year, and the number roughly doubles each year. The disease is often concentrated in specific regions that have large populations of deer or other wildlife. In some areas where Lyme disease is common, blood tests show that up to 24 percent of the general population has been exposed to the infection.

Long Point, Ontario appears to be the only region known to have a concentration of infected ticks and wild animals. Scattered cases of Lyme disease in other regions of the country suggest that other pockets may exist.

5. HOW IS LYME DISEASE TRANSMITTED?

Ticks spread Lyme disease when they suck blood from people. They can spread the disease throughout their life cycle. Immature ticks seem more likely to bite people, and being smaller than adult ticks, are harder to notice. A recent study showed that ticks must feed for at least several hours before they can spread Lyme disease.

Lyme disease does not spread from person to person. However, people who have had Lyme disease can get it a second time from ticks. People do not seem to develop a long-term immunity from the disease.

6. WHAT WORKERS ARE AT RISK?

Studies estimate that about 25 percent of Lyme disease victims in the United States became infected at their work. It is an occupational hazard for people who work outdoors in regions that have large numbers of infected ticks. Studies from these regions show that more people who work outdoors have had Lyme disease than people who work indoors.

7. WHAT ARE THE SIGNS AND SYMPTOMS OF LYME DISEASE?

Lyme disease is sometimes difficult to recognize, and it has occasionally been confused with other diseases. So it is important for people to consult with their doctors if they feel it is possible that they have Lyme disease.

The disease has three major features: a history of tick bites, a slowly expanding rash, and complications from nerve disease, heart disease, or arthritis.

History of Tick Bites

Most victims of Lyme disease were in situations where tick bites could be expected. Many people who develop the disease, however, do not remember seeing ticks or being bitten. Tick bites may cause small red irritations, but they often go unnoticed, especially those from small, immature ticks.

Tick bites commonly occur from May to September, although this varies from year to year and from region to region. Ticks sometimes move around on the body, but they usually attach themselves to the skin and stay in one place. Before feeding, ticks look like small, brown scabs or freckels. After feeding, ticks may swell considerably, and, according to some people, look like a raisin or blood blister with legs.

Soon after receiving a tick bite, some victims of Lyme disease experience a brief flu-like illness.

Slowly Expanding Rash

In about 75 percent of reported cases of Lyme disease, the victims develop a rash around or near the tick bite usually within one week. In some cases, a peculiar, bright red, circular rash develops. It soon expands to form a ring-shaped "bull's-eye" that can grow to the size of a dinner plate. Often, however, a more mild, general rash appears anywhere on the body. The rashes fade after several weeks.

Some victims, however, never develop a rash, yet experience more advanced symptoms of the disease.

Nerve Disease, Heart Disease, Arthritis

About 15 percent of untreated victims develop temporary nerve problems from a few weeks to several months after a tick bite. The most common problem is meningitis (inflammation of the covering of the brain) with fever, headache and stiff neck. Some victims experience neuritis (nerve inflammation) with pain and other disturbances such as deafness. These nerve problems are usually temporary and disappear with proper treatment.

Heart disease occurs in about 5 percent of untreated victims, often with no symptoms of infection. The most common problem is a heart block that affects the rhythm of the heartbeat. This problem is also temporary and disappears permanently with proper treatment.

Lyme disease causes arthritis in about 25 percent of studied cases and occurs several months to two years after receiving a tick bite. This arthritis most often affects the knees, although it also occurs in the shoulders, wrists, elbows, hips, and ankles. Prompt treatment usually solves this problem. Without treatment, however, this arthritis can lead to permanent disability.

In rare cases, people who have the disease for several months or years, and do not receive treatment, develop serious changes in the nervous system. These changes result in loss of feeling in the limbs, loss of memory, and extreme tiredness.

8. WHAT TESTS ARE AVAILABLE FOR LYME DISEASE?

Blood tests can detect antibodies that the body produces to protect itself against Lyme disease. These tests help to prove that Lyme disease has occurred, but they do not always work for all victims of the disease.

Because of this, a doctor cannot rely on blood tests alone. A medical examination and information about work activities are also required for diagnosing Lyme disease.

9. WHAT IS THE TREATMENT FOR LYME DISEASE?

Although Lyme disease can sometimes cause serious problems, several antibiotics are available to effectively treat it at all stages. Prompt treatment with drugs, such as tetracycline, can quickly clear up the early symptoms and prevent serious complications. Even in the late stages, penicillin and other drugs are still effective in most cases.

10. HOW CAN LYME DISEASE BE PREVENTED?

People who work outdoors in areas where ticks are found should know about the risk of Lyme disease and take precautions to protect themselves.

- Find out from your local public health office if there are ticks in your area, especially Ixodes ticks. At present, Long Point, Ontario is the only clearly defined risk area in Canada.

- Wear protective clothing to prevent ticks from getting access to your skin. This includes long sleeve shirts that fit tightly around the wrist, and long-legged pants tucked into stockings or boots.

- Use insect repellants that effectively repel ticks (such as those containing Deet). Apply the repellent to pant legs, socks, and shoes as well as the skin.

- Check for ticks on and under clothing after working in tick-infested areas. A daily total-body skin inspection greatly reduces the risk of infection since ticks may take several hours to two days to attach to the skin and feed.

- Carefully remove ticks found attached to the skin. Gently use tweezers to grasp head and mouth parts of the tick close to the skin as possible. Pull slowly to remove the whole tick. Try not to squash or crush them since this can help bacteria to get into the body.

- Wash affected area with soap and water or disinfect (with alcohol or household disinfectant) after removing ticks.

- Contact a doctor immediately if you have an illness that resembles Lyme disease.

11. CONCLUSION

Lyme disease is not common in Canada, but it is a relatively new concern. If left untreated, it can cause serious illness and disability. Reduce the risk by knowing the signs and symptoms, and by taking simple precautions in regions where Lyme disease is a potential hazard.

For further information, contact the Inquiries Office of the Canadian Centre for Occupational Health and Safety.

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